RAMP LENGTH

CHAPTER 4. SHORELINE FACILITIES

26. INTRODUCTION.

a. Shoreline Facilities. Shoreline installations provide two general functions:

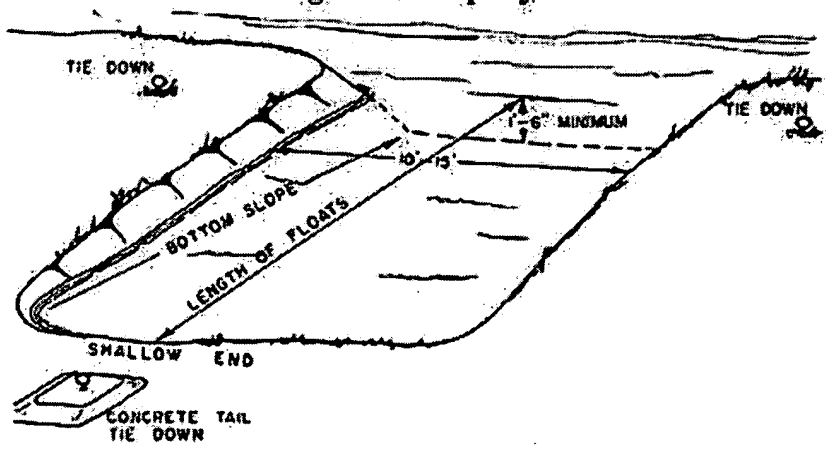
(1) enable servicing, loading and unloading, and mooring without removing the aircraft from the water, and
(2) provide haul-out facilities for removing seaplanes from the water for fresh water washdowns and maintenance.

b. Characteristics. Installations vary according to need. They range from simple wood plank ramps or slipways, to docks and piers, to elaborate ramps and marine railways.

27. SLIPWAYS.

Rectangular slips dredged in the shoreline are common and economical and often need no specially constructed sides or ends. See Figure 4-1 for an example of a slipway.

Figure 4-1. Slipway.



a. Location. A slipway should be where the water level change is not greater than 2 feet (.6 m) and the minimum low water depth is not less than 1.5 feet (.5 m).

b. Dimensions. The inside dimension of the slipway should be 2 to 3 feet (.6 to 1 m) wider than the floats and 3 to 4 feet (1 to 1.2 m) longer than the rudder-down float length.

c. Devices. A gate should be provided to dissipate wave action. A bumper, made of materials such as expanded polystyrene, old automobile tires, or strips of tires, should be attached to the inside of the front wall, sides, and gate to prevent damage to aircraft floats. Cleats to moor or secure the aircraft while it is in the slipway are recommended.

28. RAMPS.

Ramps vary widely in size, shape, and construction materials, such as from rough logs only slightly wider than the aircraft floats to wide inclines covered with heavy duty steel and/or concrete structures. The simplest ramp consists of a wood plank platform approximately 15 by 20 feet (5 m by 6 m) laid on a sloping shore, with half of its length in the water thereby permitting a small float plane to taxi up and out of the water.

a. Location. A minimum of 100 feet (30 m) of unobstructed water should be available directly off-shore from the ramp, in the direction from which approaches are normally made.

b. Design Concept. Ramps are of fixed or hinged type construction. Fixed ramps are usually weighted down or attached to a fixed in-water footing at the toe, and secured to a stable on-shore structure such as a seawall at the other end. Hinged ramps are allowed to rise and fall with the water by means of a hinge on the shore end, while the toe end is buoyed at a predetermined depth. Fixed ramps are more common, but become relatively costly in shallow areas or where the water level variation exceeds 8 feet (2.5 m). Pilings or piers are commonly used to support the stringers of fixed ramps.

c. Slope. The slope of a ramp should not be greater than 6:1, with flatter slopes ranging to 10:1 being desirable. Slopes flatter than 10:1 are usually too long and costly to construct. Ramps intended to serve trigear amphibians should not be steeper than 8:1 since, with steeper slopes, the hull of some amphibians may drag on the ramp as the craft enters the water.

d. Depth. A 4 foot (1.2 m) depth of toe will provide sufficient clearance for most waterborne aircraft. A 3 foot (1 m) depth will accommodate all but the heaviest types of amphibians. An 18 inch (45 cm) depth is adequate for small, light floatplanes. In all cases, depth dimension should be established based on the low water level datum in that locality.

e. Width. A ramp width of 30 to 40 feet (9 to 12 m) will accommodate aircraft in most wind, current, and tidal conditions. 15 feet (4.5 m) is the minimum ramp width required for small twin float or amphibious aircraft operation when water and wind conditions are relatively calm. Practically all light waterborne aircraft can be handled easily, and pilots of small seaplanes can make an unattended ramp approach under adverse conditions, if 5 feet (1.5 m) is added to this minimum width.

f. Decking. Decking can be laid diagonally or at right angles to the line of travel. Planks should be placed rough side up, and have a .5 inch (1.3 cm) space between each plank. When laid at right angles to the line of travel, the up-ramp edge of each plank may be raised no more than 1 inch (2.5 cm) to permit the hull of the plane to slide easily and still provide good footing for people walking on the ramp. All bolts, nails, and spikes used to attach the decking should be countersunk to avoid damage to floats or tires.

29. FIXED DOCKS.

a. Location. A minimum of 100 feet (30 m) of unobstructed water or a turning basin should be available in the direction from which approaches are normally made to the floating dock. Docks should be located so that aircraft have access to both sides. Aircraft are usually tied on the inshore side of the dock during inclement weather, in order to use the dock as a breakwater.

b. Clearance. The recommended minimum clearance between the centerline of a taxi route and the near faces of piers, floats, ramps, or marine railway is 60 feet (18 m). Waterborne aircraft can safely taxi past obstructions as close to the centerline of the taxi route as one-half their wingspan plus 15 feet (5 m); however, this factor should be increased at locations having strong currents and windy conditions. An unobstructed dock surface area 21 feet (6.5 m) wide will provide for wing clearance over the dock and permit most floatplanes or small amphibians to come alongside the dock or pier.

c. Separation. When aircraft operate under their own power into, out of, or between mooring positions, the recommended minimum separation between the limits of the mooring positions is 30 feet (10 m). When aircraft are moved by hand, the separation distance between the centers of the berthing or mooring positions should be no less than 60 feet (18 m).

30. FLOATING DOCKS.

Floating docks offer great flexibility. These units ride the waves and work satisfactorily in areas of negligible to significant water level variation. Floating docks are commonly referred to as "floats," not to be confused with aircraft floats.

a. Design Concepts. A small float, 10 by 15 feet (3 by 4.5 m), designed to support loads up to 2,500 pounds (1 134 kg), will handle a single plane. Larger floats intended for mooring two or more aircraft should be designed to support gross loads up to 5,000 pounds (2 268 kg). Floats as narrow as 7 feet (2 m) can be used where a long, floating dock parallels the shore. Floats are usually constructed from locally available materials.

b . Dimensions. Float dimensions are determined by the number of aircraft simultaneously using or projected to use the float. The design aircraft length plus 20 feet (6 m) clearance both fore and aft is recommended where aircraft are to be docked or moored alongside the float. A float should be wide enough for planes to dock on each side with a 10 foot (3 m) minimum clearance between wingtips.

c. Flotation. A variety of materials have been used to provide buoyancy for floating docks, such as logs, milled timber, polystyrene billets, fiberglass, and steel containers.

(1) Polystyrene billets have proven to be satisfactory buoyancy devices for floats. The planks should be evenly distributed, rather than piled at concentrated points, under the superstructure. A barrier of 6 mil (.15 mm) black polyethylene sheeting should be placed between all treated timber and flotation material contact surfaces. The load supporting characteristics of polystyrene or styrofoam is approximately 50 pounds per cubic foot (800 kilograms per cubic meter) of material. A common billet size is 10 inches by 20 inches (25 by 50 cm) by 9 feet (3 m). Further data on this material may be obtained from the manufacturers. It is recommended that foam planks be enclosed with woven galvanized wire to prevent damage from aquatic animals and sea gulls. Polystyrene deteriorates when exposed to petroleum products, gas spills, etc.

(2) Fifty-five gallon steel drums are commonly used as flotation devices. Drums should be placed symmetrically around the perimeter of the float to ensure stability. They are fastened to the float by steel straps of sufficient length to extend around the drum and main framing members of the float. Foam, fiberglass, plywood boxes, and steel drum floats are susceptible to damage where deadheads or strong currents prevail. Steel drums have a short life expectancy in salt water. The pilot should be aware of the corrosive affect of galvanic action caused by dissimilar metals. Securing the aircraft to steel or metal drums, by a chain or wire rope, will start a galvanic action that will corrode the aluminum floats. Satisfactory floats can be improvised by using life rafts, small floating docks, pontoons, and similar devices which can be obtained in the open market.

(3) Where relatively large and straight timber is available, logs may be used to construct a raft type float.

d. Devices. A continuous 4 by 4 inch (10 cm by 10 cm) wood rail, raised approximately 2 inches (5 cm) above the float deck, commonly called bull rail or tie rail, is recommended. Bull rails should be secured by long lagbolts to dock cross-members or logs. Cleats should be provided, approximately 5 feet (1.5 m) apart, along the bull rail or sides of the float. Corner posts should be extended slightly above the deck to serve as bollards. Bumpers, installed along the sides of the structure, extending below the edge of the float sufficient length to prevent damage to aircraft floats, are recommended.

e. Combined Float/Ramps. Floats equipped with ramps at each end make good operational structures where amphibian aircraft are to be accommodated. A long, narrow float with ramps on both sides is adequate for mooring or tieing down light, single engine floatplanes. A ramp incline no steeper than 8:1

is recommended. The aircraft taxi onto the ramp and are pulled up and tied down to the ramp. This type of float is usually constructed at right angles to the master float. A 144 by 40 foot (44 by 12 m) floating dock, with 10 foot (3 m) wide floats, and 15 foot (4.5 m) ramps on both sides can be used for seaplane storage. Additional docks or floats can be added as needed.

31. GANGWAYS.

Floats are usually connected to the shore or pier by a gangway. The length of the gangway depends on the maximum water level variation. Gangways should not be less than 15 feet (4.5 m) long, the normal being 40 to 50 feet (12 to 15 m). The width should be at least 5 feet (1.5 m). Floating gangways 5 feet (1.5 m) or less wide should have longitudinal outriggers spaced every 8 to 10 feet (2.5 to 3 m) to prevent excessive rolling of the gangway. Widths of 6 to 8 feet (2 to 2.5 m) enable baggage carts or other freight equipment to be used. Handrails, preferably on both sides, should be provided. A slope of 2.75:1 or less permits easy walking and reduces the danger of the railings becoming an obstruction to wings. If the facility is to adequately serve the public, requirements contained in the Americans With Disabilities Act (ADA) accessibility guidelines should be satisfied.

32. BARGES.

A barge anchored off-shore makes an excellent seaplane service facility. An office, lounge, or shop is normally included "aboard;" and floating docks can be added alongside the barge. The barge may be anchored directly to the shore or to a pier by booms and a gangway or anchored off-shore in a fixed position.

33. PIERS.

Piers are recommended where the variation in water level is 16 inches (45 cm) or less.

a. Location. A minimum of 100 feet (30 m) of unobstructed water or a turning basin should be available in the direction from which approaches are normally made to the pier. Piers should be located so that access to them by the public will not require crossing the apron or hangar area.

b. Design Concepts. The pier should extend into the water to a point where the depth at mean low water level is at least 3 feet (1 m). The supporting timbers and decking of fixed structures used for passengers and cargo operations must be designed to support live loads of at least 100 pounds per square foot (488 kilograms per square meter). An access gangway approximately 5 feet (1.5 m) wide with handrails on both sides is recommended. An open deck handling area approximately 30 by 50 feet (9 m by 15 m) at the end of the walkway provides tie-up space for four small or three large seaplanes.

c. Width. Fixed piers or wharfheads should be 8 to 10 feet (2.5 to 3 m) wide and built strong enough to support a loaded pickup truck.

d. Materials. At those locations where timber piles can be used, they are the most economical type of construction. Water jetting and pile driving are common methods of setting piles. Decking spaced with a 1/2 inch (1.3 cm) gap between planks will allow for drainage and expansion. Since piers and wharves are constructed with decks above mean high water, most of the timber supporting members will be subject to alternate cycles of wetting and drying. To prevent decay, creosote or similarly treated timbers must be used. Urethane, epoxy, and shellac are acceptable sealers for all creosote treated wood, and should be used to prevent tracking creosote.

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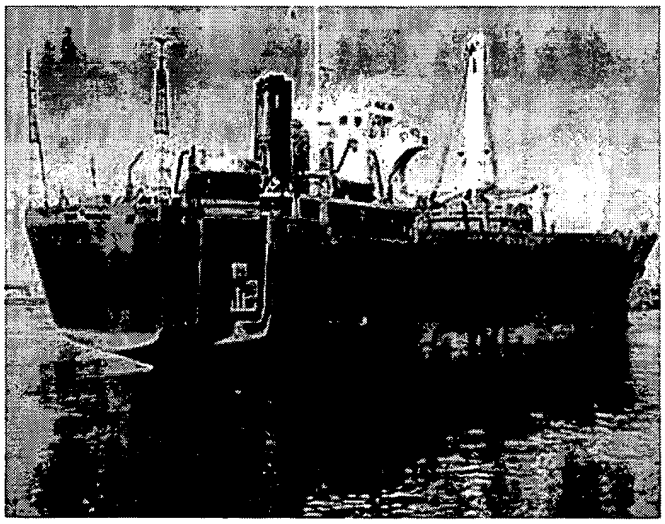
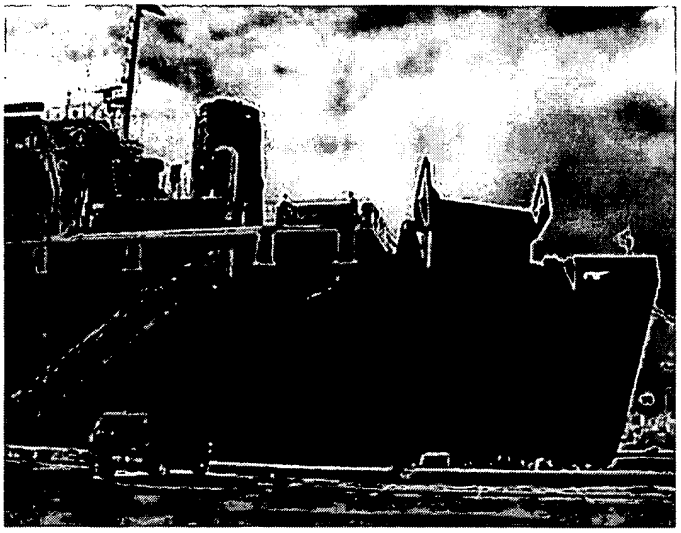
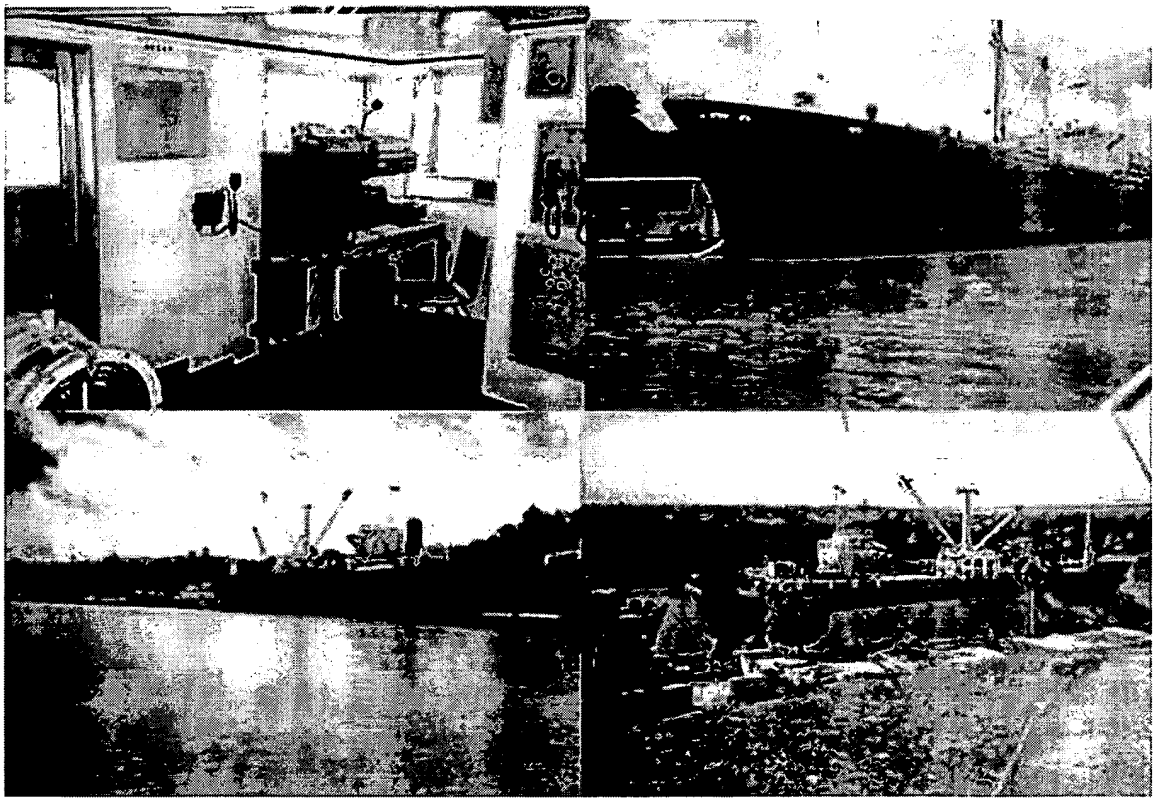
VESSEL IDENTIFIER: PAC10

Price: U.S. $750,000.00

DIMENSIONS		
	Feet	Meters
Length (LOA)	347.6	106
Breadth	55.7	17
Draft (Winter)	1.75	532 mm
Speed	12 Knots	

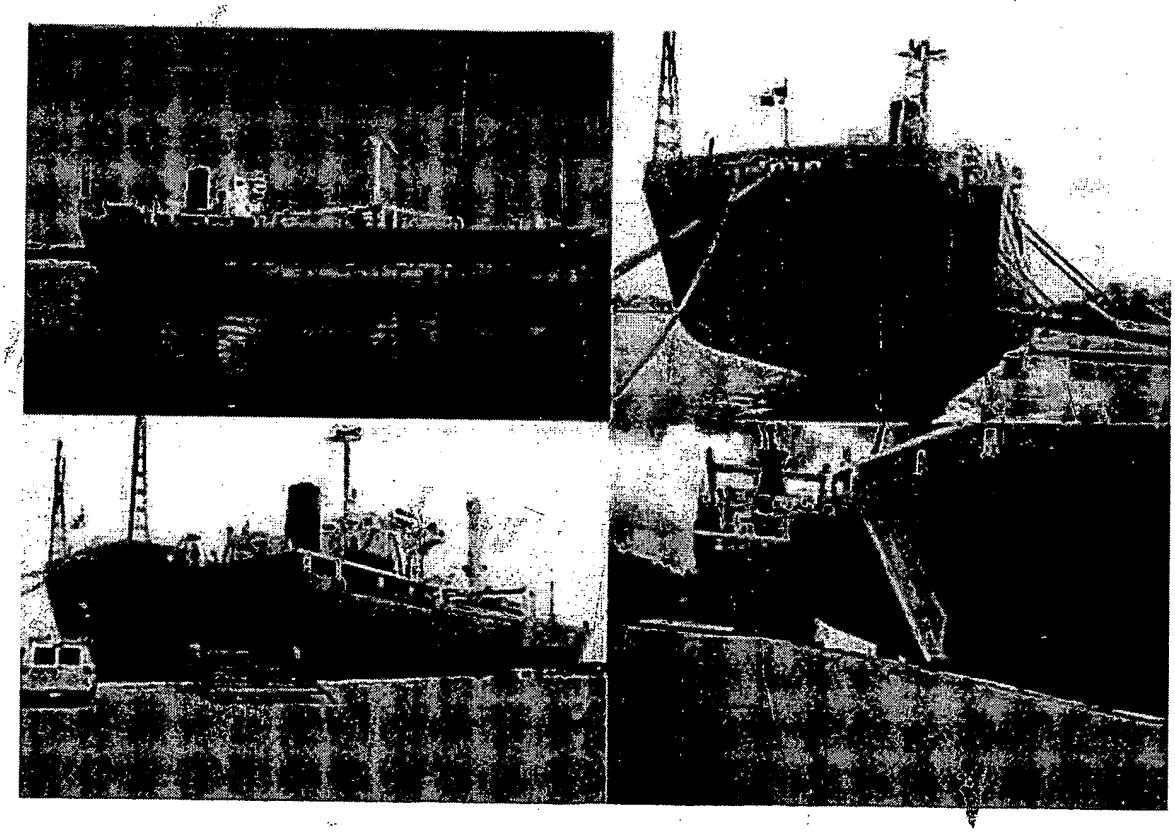






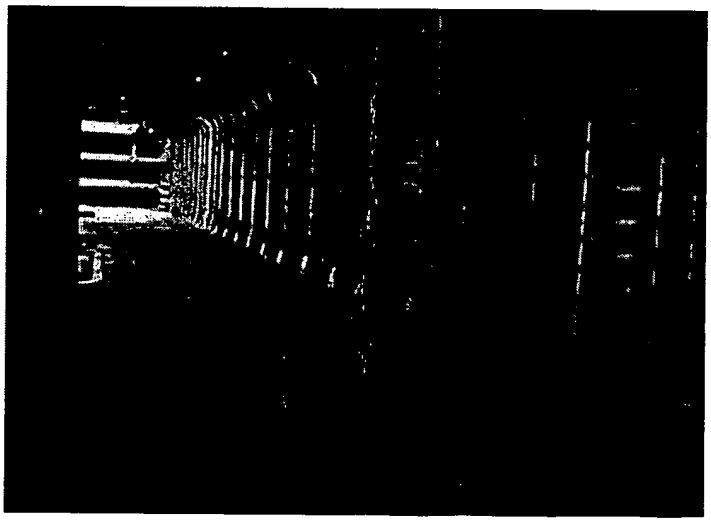
PARTICULARS	
Flag	Panama
Year Built	1975

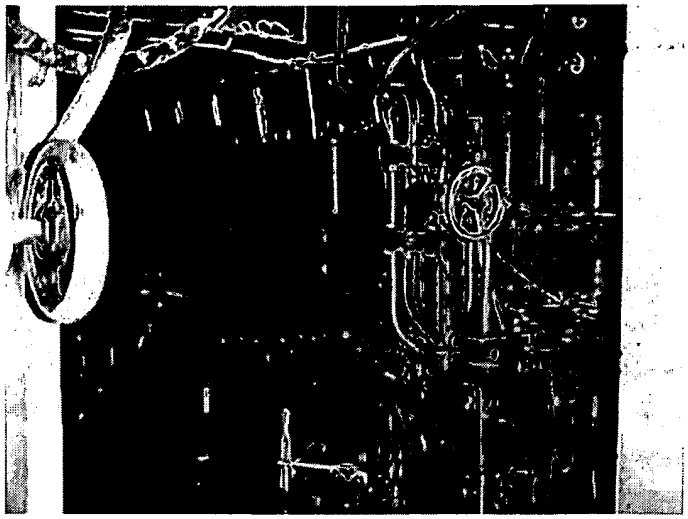
Current Location	
Last Dry-docked	
Class	
Certificates	
GRT/NRT	5,304/1591
DWT	4,278
Lightweight	2971

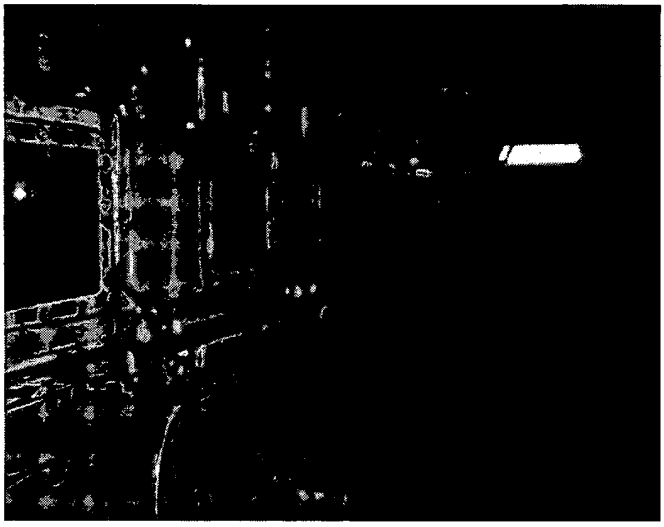


Equipment	
Main Engine	Diesel 3,770 PS – 5,000 BHP Mitsubishi 8 UET 45/80 D
Generator	2 - Yanmar 6 MAL.HT 260 KVA 440 Volts 60 Hz.

Bow Thruster	
Consumption	12 Knots on ABT 12 M/Tons/D +1 M/Tons/day Gas Oil







Cargo Data	
Gear	2 x 20 Tons @ 30 Degrees
Hatches on Deck	2 - 13x10.4 Meters 2 - 42.6x34.1 Feet
Hatches on Tween	2 - 7.15x5.2 Meters 2 - 23.4x17.0
Deck Strength	Tank Top Tween 4.5 Tons/Square Meter
Cars	200 Pieces

Lower Hold

The access to lower Hold Nr. 1 and 2 is only available by the tween hatches (pontoon type) with the vessel cranes or (port cranes) The hold is not serve by elevators.

to lower hold are:
Hatch No 1 7.15 meters length x 5.1 meters wide
Hatch No. 2 7.15 meters length x 5.1 meters wide

Lower hold No.1 Dimensions 23.3 m (L) x 13.40 m (W) 5.3 m (H)
Lower hold No.2 Dimensions (decreasing due to ballasting tanks)

Tween Deck

The access to Tween Deck (only one hold in tween deck with four different Dimensions- free space from the ramp access to fidley – aisle space at

Portside/starboard – tween deck – car decks) could be by deck hatches (Pontoons hatches) (With the vessel cranes or port cranes) and/or by the Ramp. In the middle of the tween, vessel has derrick bushing, which does not affect essential operation of access.

Between access ramp and quarter deck, vessel has a Fidley.
Free space from access ramp to Fidley as per Master plan enclosed.

Two laterals aisle space from Fidley till tween deck entry:
Portside of Fedley (aisle space) 12M(L) x 5.80M (W)

Hatch No1. = 13M (L) x 10.4M (W)
Hatch No2. = 13M (L) x 10.4M (W)

Each Hatch is covered by four pontoons.

Crew will need about 20 minutes for opening Hatches.
The pontoon are deposited by vessel crane in free deck space (bends) between hatches and derricks.

Ramp Dimensions

Length	14 Meters
Width	4.15Meters

Access Door (Ramp)

Wide	4.50 Meters
High	4.22 Meters

Elevators (serving only to car decks)

Two elevators platform type situated one in portside and one on starboard
Each elevator can load one car by operation. After finishing loading car decks, you can leave the platform up or down.

The maximum between car deck is 1.5 Meters.
Vessel has three car decks. Car decks are losing breadth in tiers.

Meters of each Car Deck

Car deck No.1 = 184.33 M2
Car deck No.2 = 154.26 M2
Car deck No.3 = 136.56 M2

Dimensions approx of car deck

Car deck No.1 = Length 16 M – High 1.50 M
Car deck No.2 = " "
Car deck No.3 = " "

Cubic Capacity

No. 1 Cargo Hatch	4.401 cbft Bale	4,238 cbft Grain
No. 2 Cargo Hatch	4,401 cbft Bale	4,238 cbft Grain
Tween Deck	277,643 cbft Bale	291,145 cbft Grain
Hold No. 1	65,850 cbft Bale	69,714 cbft Grain
Hold No. 2	76,967 cbft Bale	82,639 cbft Grain
Total ----------	425,262 cbft Bale	451,974 cbft Grain
In Meters	12,042 cbm Bale	12,798 cbm Grain

Strength

On deck	1.5 Mtons/per M2
On tween	4.5 Mtons/per M2
On top	4.5 Mtons/per M2

Deck Cargo

12 x40' Container (or equivalent) total maximum weight 200 Mtons.

Square Meters

Weather Deck	511.96 M2

Car Deck 481 M2
Tween Deck from Ramp till car Decks= 100,48 M2
Lower Hold No.1 = 286 M2
Lower Hold No.2 = 325.6 M2

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